

*12* *C* because the movement of said at least one optical component causes light to arrive at the subject in a more diffuse or defocused fashion.

REMARKS

**Specification**

The objection to the disclosure noted at paragraph 4 of the Office Action is remedied by the above amendment of specification paragraphs [0011] and [0016] such that the "Summary of the Invention" section now explicitly provides a brief technical description of the invention.

The objection to the specification noted at paragraph 5 of the Office Action is remedied by amendment of Claim 5 to refer to a motorized drive system rather than an electromechanically operable drive system. Antecedent basis is found at paragraph [0023] of the specification.

In view of the foregoing, it is respectfully asked that the objections to the specification be withdrawn.

**Claim Rejections 35 U.S.C. § 112**

Claims 6-8 are rejected under 35 USC 112, first paragraph, because the specification does not teach that the light concentrating optical system is fixed to the mirror prism as set forth in Claim 6. Consequently, the word "fixed" in Claim 6 has been replaced by the word --adjacent--. Figs 1 and 2 show lenses 9 and 11 adjacent to mirror prism 10. Withdrawal of the rejection of Claims 6-8 under 35 USC 112 is respectfully requested.

The rejection of Claims 11-15 under 35 USC 112, first paragraph, is respectfully traversed because Claim 11 is not a "single means claim" as asserted in the Office Action. Claim 11 is a method claim having a single step that is not in "step for" format. The step of Claim 11 requires a well-defined physical action, namely "moving at least one of said plurality of optical components," to achieve a desired result (darkening at the subject). By contrast, an example of an impermissible claim that is indefinite for undue breadth would involve a step simply written as "causing light to arrive at the subject in a more diffuse or defocused fashion". In this example, unlike Claim 11, there is no reference to physical structure or how the result is achieved. Thus, the doctrine of *In re Hyatt* should not apply to Claim 11, or to Claims 12-15 depending therefrom. In view of the foregoing, withdrawal of the rejection of Claims 11-15 under 35 USC 112 is respectfully sought.

***Claim Rejections 35 U.S.C. § 102***

Claims 1, 3 and 10 are rejected under 35 USC 102(e) as being anticipated by US 6,285,019 (Engelhardt et al.). The rejection is respectfully overcome for the following reasons.

Engelhardt et al. teaches a pinhole technique for a confocal scanning microscope, which is now explicitly outside the scope of amended Claim 1. The varifocal optical system 8 of Engelhardt is used to vary the optically effective pinhole diameter to maintain the entire light intensity at detector 5. See column 3, lines 38-53. In other words, Engelhardt et al. teaches moving one of the plurality of optical components in the

beam path so that a darkening does not occur at a confocal detector. The intensity of light reaching an observed focal plane of subject 3 is not effectively diminished by adjustment of varifocal optical system 8. By contrast, the present improvement of Claim 1, as amended, relates to a microscope that does not rely on confocal imaging and thus does not require scanning of point-like illumination over a region of interest.

Claims 3 and 10 depend from Claim 1 and thus are not anticipated for the same reasons amended Claim 1 is not anticipated.

For the reasons stated above, removal of the rejection of Claims 1, 3, and 10 as being anticipated by Engelhardt et al. is respectfully sought.

Claims 1-3 and 9 are rejected under 35 USC 102(b) as being anticipated by US 5,155,509 (Kleinberg). This rejection is respectfully overcome for the following reasons.

Kleinberg teaches a system wherein an optical element (first mirror 38) that is not normally in the illumination beam path is pivotable into the illumination beam path 30 for redirecting light transversely along axis 44 to a second mirror 42, whereby the illumination light is reflected to the eye along an oblique illumination axis 36. Thus, light intensity is not reduced in Kleinberg, but rather the light is redirected to a different portion of the retina which is spaced from the macula. Please see column 3, lines 50-64. Claim 1 of the instant application is directed to an improvement wherein at least one of a plurality of optical components normally in the illumination beam path of the microscope is moved so that a

reduction in light intensity occurs at the subject. Thus, the invention of Claim 1, and Claims 2, 3, and 9 depending therefrom, is fundamentally different from the disclosure of Kleinberg.

Further to this reasoning, Claim 2 as amended explicitly provides that "said mechanism removes said at least one optical component from said illumination beam path to cause said darkening." In Kleinberg, however, an optical element is moved *into* the illumination beam path to change the angle of incidence of the entire illumination beam rather than darken.

Regarding Claim 3, the first mirror support 40 does not change the position of first mirror 38 *in the illumination beam path* as claimed.

An argument analogous to that provided above with respect to Claims 2 is applicable to Claim 9. In addition, Kleinberg teaches movement of a single optical element (first mirror 38) rather than an assembly of optical elements.

For the reasons stated above, Applicant respectfully requests that the rejection of Claims 1-3 and 9 as being anticipated by Kleinberg be removed.

Claims 1 and 2 are rejected under 35 USC 102(b) as being anticipated by US 4,715,704 (Biber et al.). This rejection is respectfully traversed for reasons given below.

Biber et al. teaches a field stop 3 which produces darkening when it is moved *into* the illumination beam path. As noted above, Claim 1 of the instant application is directed to an improvement wherein at least one of a plurality of optical components *normally* in the illumination beam path of the

microscope is moved so that a reduction in light intensity occurs at the subject. If the field stop 3 of Biber et al. is normally in the illumination beam path, then its movement out of the illumination beam path as described in the patent will produce a lightening at the subject, not a darkening. If the field stop 3 is normally not in the illumination beam path, then it is not one of "a plurality of optical components in said illumination beam path" of the microscope as required by the preamble Claim 1. Thus, under either interpretation, Biber et al. does not anticipate Claim 1. My  
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Claim 2 as amended contains the limitation "wherein said mechanism removes said at least one optical component from said illumination beam path to cause said darkening." In Biber et al., removal of field stop 3 from the illumination beam path causes lightening, not darkening. Therefore, Biber et al. does not anticipate Claim 2.

In view of the reasons presented above, Applicant respectfully requests that the rejection of Claims 1 and 2 as being anticipated by Biber et al. be reconsidered and withdrawn. //

Claims 1-2, 4 and 9 are rejected under 35 USC 102(b) as being anticipated by US 5,260,965 (Nakazeki et al.). This rejection is respectfully overcome for the reasons stated below.

The interpretation of Nakazeki et al. in the Office Action provides two situations. In the first situation, visible light source 5 is in use and the aberration compensating device 9 is set such that no optical element (space portion 9b) is in the beam path. From this situation, the Office Action contends that movement of convex lens 9a into the beam path results in

darkening. However, this interpretation suffers from the same problem discussed with respect to Biber et al., namely that convex lens 9a is not one of "a plurality of optical components in said illumination beam path" of the microscope as required by the preamble Claim 1. It is further noted that this situation runs contrary to the intended manner of operation of the device described in Nakazeki et al. because the convex lens is intended for use with infra-red laser 4, and not with visible light source 5. Finally, any darkening as suggested in the Office Action will be minimal given that lens 9a is designed to correct for chromatic aberrations.

In the second situation discussed in the Office Action, infra-red laser light source 4 is in use and the aberration compensating device 9 is set such that convex lens 9a is in the beam path. From this situation, the Office Action contends that movement of convex lens 9a out of the beam path results in darkening. However, since the light emitted by laser light source 4 is invisible, there will be no observable darkening (reduction in visible light intensity) at the subject.

The above arguments also apply to Claims 2, 4, and 9 which depend from Claim 1 and inherit all the limitations thereof. regarding Claim 9, the Office Action does not identify any "assembly of optical elements" as claimed.

Based on the above remarks, removal of the rejection of Claims 1-2, 4, and 9 as anticipated by Nakazeki et al. is respectfully requested.

***Claim Rejections 35 U.S.C. § 103***

Claims 11 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Engelhardt et al. Favorable reconsideration of Claims 11 and 15 and removal of the stated obviousness rejection is respectfully requested in view of the amendment of Claim 11.

The method of Claim 11 relates to microscopes by which optical observation of an illuminated two-dimensional field of view on the subject is possible, and does not relate to confocal scanning microscopes wherein a point of light is scanned across a region of interest. Thus, Claim 11 has been narrowed in this regard. Since the purpose of the varifocal lens system 8 of Engelhardt et al. is unrelated to effectively reducing illumination intensity at the subject, and a person skilled in the art would not seek a solution in the confocal microscopy art to a problem that is associated with the use of non-confocal surgical microscopes, it is Applicant's respectful position that amended Claim 11, and Claim 15 depending therefrom, are not obvious in view of Engelhardt et al.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Biber et al. Withdrawal of this rejection is asked because Biber et al. Biber et al. teaches a field stop 3 which produces darkening when it is moved into the illumination beam path. If field stop 3 is one of a plurality of optical components arranged in the illumination beam path in accordance with the preamble of Claim 11, its movement out of the beam path causes lightening at the subject. Moreover, the step of moving the field stop 3 either blocks or unblocks a portion of the

illumination beam, and does not cause light "to arrive at the subject in a more diffuse or defocused fashion" as claimed. Therefore, removal of the rejection is respectfully requested.

Claims 5 and 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakazeki et al. This rejection is respectfully overcome based on the remarks provided below and previously herein.

The comments made above with respect to Nakazeki et al. and the two situations presented by this reference are reiterated here, such that the subject matter of Claims 5 and 11-13 is not obvious. In addition, a user without knowledge of the type of light source would not see a change or darkening if the infra-red light source is in use. Reconsideration and withdrawal of the rejection of Claims 5 and 11-13 is earnestly sought.

Claims 11 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kleinberg. As discussed above, Kleinberg teaches insertion of a mirror in to assist in the redirection of the illumination beam to the subject at an oblique angle. No darkening is achieved, and the light is not defocused or made more diffuse. Referring to Claim 14 in particular, mirror 19 is pivoted or moved so that light is no longer focused on the subject. See paragraph [0027] of the specification. Consequently, the reference does not teach or suggests the steps of Claims 11 and 14. Favorable reconsideration of Claims 11 and 14 is respectfully requested.

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**Allowable Subject Matter**

Claims 6-8, which have not been rejected based on the cited prior art, are considered to contain allowable subject matter.

**Conclusion**

If the Examiner has any questions, or if any information is needed to assist in expediting prosecution of the instant application, the undersigned attorney of record may be contacted at the number provided below.

Respectfully submitted,

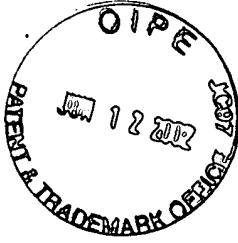
HODGSON RUSS LLP

By

George L. Snyder, Jr.  
Reg. No. 31,729

One M&T Plaza, Suite 2000  
Buffalo, New York 14203-2391  
(716) 856-4000  
DATED: June 5, 2002

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June 5, 2002

Date of Signature

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Ulrich Sander

Serial No.: 09/847632

Group: 2872

Filed: May 2, 2001

Examiner: Thong Q. Nguyen

For: MICROSCOPE

**MARKED VERSION OF AMENDED SPECIFICATION PARAGRAPHS**

Commissioner for Patents

Washington, D.C. 20231

Sir:

This Marked Version of Amended Specification Paragraphs accompanies an Amendment and Response to the Office Action mailed February 6, 2002 in the above-identified application. Paragraphs [0011] and [0016] are amended as follows.

[0011] This object is achieved [by a microscope as defined by the features of Claim 1, and] in a microscope of the general type having an illumination device for illuminating a subject by directing light along an illumination beam path through a main objective of the microscope or in a region of a main objective of said microscope, and a plurality of optical components in the illumination beam path, by providing a mechanism for moving at

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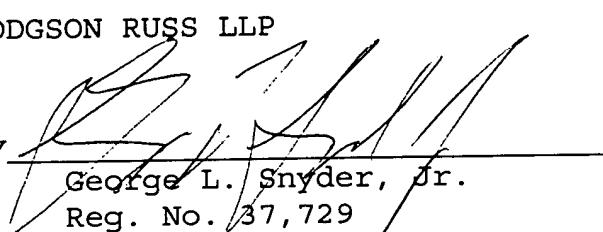
least one of the optical components so that a darkening occurs at the subject because of the movement of the optical component.  
This object is also achieved by a related method [as defined by the features of Claim 5] comprising the step of moving at least one of the plurality of optical components so that a darkening occurs at the subject because the movement of the optical component causes light to arrive at the subject in a more diffuse or defocused fashion.

[0016] [The dependent claims describe and protect further improvement actions.] An exemplary embodiment of the invention is presented in the drawings and the description pertaining to the Figures, and the appended claims define improvements according to the present invention.

Respectfully submitted,

HODGSON RUSS LLP

By

  
George L. Snyder, Jr.

Reg. No. 37,729

One M&T Plaza, Suite 2000  
Buffalo, New York 14203-2391  
(716) 856-4000  
DATED: June 5, 2002

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Barbara Haggerty  
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Ulrich Sander

Serial No.: 09/847632

Group: 2872

Filed: May 2, 2001

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**MARKED VERSION OF AMENDED CLAIMS**

Commissioner for Patents

Washington, D.C. 20231

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Sir:

This Marked Version of Amended Claims accompanies an Amendment and Response to the Office Action mailed February 6, 2002 in the above-identified application. Claims 1-6 and 9-11 are amended as follows.

1. (amended) In a microscope having [an] a non-scanning illumination device for illuminating [the] a subject over a field of view by directing light along an illumination beam path through a main objective of said microscope or in a region of a main objective of said microscope, and a plurality of optical components in said illumination beam path, the improvement comprising:

a mechanism for moving at least one of said plurality of optical components so that a darkening occurs at the subject because of the movement of said at least one optical component.

2. (amended) The improvement according to claim 1, wherein said mechanism removes said at least one optical component from said illumination beam path to cause said darkening.
3. (amended) The improvement according to claim 1, wherein said mechanism changes [the] a position of said at least one optical component in said illumination beam path to cause said darkening.
4. (amended) The improvement according to claim 2, wherein said plurality of optical components includes a collector lens, and said mechanism includes a manually operable drive system for removing said collector lens from said illumination beam path to cause said darkening.
5. (amended) The improvement according to claim 2, wherein said plurality of optical components includes a collector lens, and said mechanism includes [an electromechanically operable] a motorized drive system for removing said collector lens from said illumination beam path to cause said darkening.

6. (amended) The improvement according to claim 2, wherein said plurality of optical components includes a mirror prism and a light-concentrating optical system [fixed] adjacent thereto for conveying illuminating light through said main objective, and said mechanism removes at least a portion of said light-concentrating optical system from said illumination beam path.
9. (amended) The microscope according to claim 1, wherein said plurality of optical components includes an assembly of optical elements in said illumination beam path, and said mechanism removes said assembly from said illumination beam path to cause said darkening.
10. (amended) The microscope according to claim 1, wherein said plurality of optical components includes an assembly of optical elements in said illumination beam path, and said mechanism displaces said assembly along said illumination beam path to cause said darkening.
11. (amended) A method for darkening an illuminated subject under a microscope having [an] a non-scanning illumination device with an integrated illumination beam path in which a plurality of optical components are arranged, said method comprising the step of:  
moving at least one of said plurality of optical components so that a darkening occurs at the subject because the movement of said at least one optical component

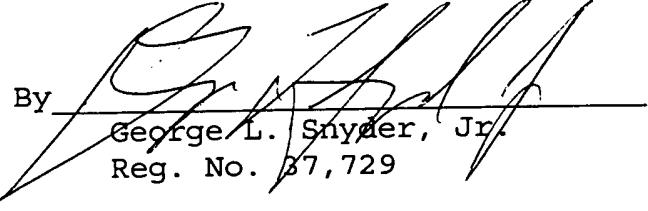
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MARKED VERSION OF AMENDED CLAIMS  
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causes light to arrive at the subject in a more diffuse or  
defocused fashion.

Respectfully submitted,

HODGSON RUSS LLP

By

  
George L. Snyder, Jr.

Reg. No. 37,729

One M&T Plaza, Suite 2000  
Buffalo, New York 14203-2391  
(716) 856-4000  
DATED: June 5, 2002

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